

Exhibit A

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Paper 13
Entered: September 10, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS AMERICA, INC., and
SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

COBBLESTONE WIRELESS, LLC,
Patent Owner.

IPR2024-00606
Patent 7,924,802 B2

Before KARL D. EASTHOLM, NORMAN H. BEAMER, and
RUSSELL E. CASS, *Administrative Patent Judges*.

CASS, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

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I. INTRODUCTION

A. Background

Samsung Electronics America, Inc., and Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–4, 6–10, 13–14, 17, and 21–25 (the “challenged claims”) of U.S. Patent No. 7,924,802 B2 (Ex. 1001, “the ’802 patent”). Paper 3 (“Pet.”). Cobblestone Wireless, LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). With our permission, Petitioner filed a Preliminary Reply (Paper 9, “Pet. Prelim. Reply”), and Patent Owner filed a Preliminary Sur-reply (Paper 10, “PO Prelim. Sur-reply”).

We have authority to determine whether to institute an *inter partes* review, under 35 U.S.C. § 314 and 37 C.F.R. § 42.4. An *inter partes* review may not be instituted unless it is determined that “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314 (2018); *see also* 37 C.F.R. § 42.4(a) (2020) (“The Board institutes the trial on behalf of the Director.”). The reasonable likelihood standard is “a higher standard than mere notice pleading,” but “lower than the ‘preponderance’ standard to prevail in a final written decision.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

For the reasons provided below and based on the record before us, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. Accordingly, we institute an *inter partes* review on all grounds set forth in the Petition.

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B. Real Parties in Interest

Petitioner states that “[t]he real parties-in-interest for Petitioner[] are Samsung Electronics America, Inc. and Samsung Electronics Co., Ltd.”

Pet. 102. Petitioner also identifies, “[o]ut of an abundance of caution and to avoid additional issues associated with real parties-in-interest, . . . T-Mobile USA, Inc., AT&T Services Inc., AT&T Corp., AT&T Mobility LLC, and Cellco Partnership d/b/a Verizon Wireless because Petitioner’s products are accused of infringement in their respective patent infringement actions.” *Id.*

Patent Owner identifies Cobblestone Wireless, LLC as the real party in interest.” Paper 7, 2.

C. Related Proceedings

The parties identify the following proceedings involving the ’802 patent: *Cobblestone Wireless, LLC v. Samsung Electronics Co., Ltd.*, No. 2:23-cv-00285 (E.D. Tex.) (the “parallel district court proceeding”); *Cobblestone Wireless, LLC v. T-Mobile USA, Inc.*, No. 2:23-cv-00381 (E.D. Tex.); *Cobblestone Wireless, LLC v. Cellco Partnership d/b/a Verizon Wireless*, Case No. 2:23-cv-00382 (E.D. Tex.); *Cobblestone Wireless, LLC v. AT&T Services Inc.* No. 2:23-cv-00380 (E.D. Tex.); *Cobblestone Wireless, LLC v. Hewlett Packard Enterprise Company, et al.*, Case No. 2:23-cv-00457 (E.D. Tex.); *Cobblestone Wireless, LLC v. CommScope Holding Company, Inc.*, No. 2:23-cv-00455 (E.D. Tex.); *Cobblestone Wireless, LLC v. Cisco Systems, Inc.*, No. 2:23-cv-00454 (E.D. Tex.); *Hewlett Packard Enterprise Company and Cisco Systems, Inc. v. Cobblestone Wireless, LLC*, IPR2024-00707; and *Wireless Communication Systems and Methods*, Re-Examination Appl. No. 90/019,458. Pet. 102–103; Paper 7, 2–3.

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D. The '802 Patent (Ex. 1001)

The '802 patent is directed to a wireless communication system and method that transmits signals simultaneously over a communication channel at different RF center frequencies. Ex. 1001, code (54), code (57). The Background of the '802 patent explains that “[c]ommunication systems generally contain one or more transmission channels to transmit data from the transmitter to the receiver.” *Id.* at 1:12–14. The Background describes a transmitter in such a system that “is limited to up-converting a signal to one center frequency (or modulation frequency), which is the LO [(local oscillator)] frequency.” *Id.* at 1:29–32. “Typically,” the Background explains, “the amount of information transmitted around the center frequency is limited by the bandwidth of the transmitter around the center frequency,” which “limits the amount of data that can be transmitted.” *Id.* at 1:32–35. Thus, “[t]ypical prior art approaches to improving the information capacity in a wireless communication system involve maximizing the bandwidth around the center frequency to increase the amount of information that may be modulated onto the carrier frequency.” *Id.* at 1:35–40.

To overcome this issue, the '802 patent proposes “a method of transmitting information in a wireless communication channel” that includes “transmitting first information across a first frequency range having a first center frequency, a first highest frequency, and a first lowest frequency, and simultaneously transmitting second information across a second frequency range using the same wireless transmitter,” where the second frequency range has “a second center frequency greater than the first center frequency, a second highest frequency, and a second lowest frequency.” Ex. 1001, 1:60–2:5.

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Figure 2 of the '802 patent, reproduced below, “illustrates a wireless communication system according to one embodiment of the present invention.” Ex. 1001, 5:53–54.

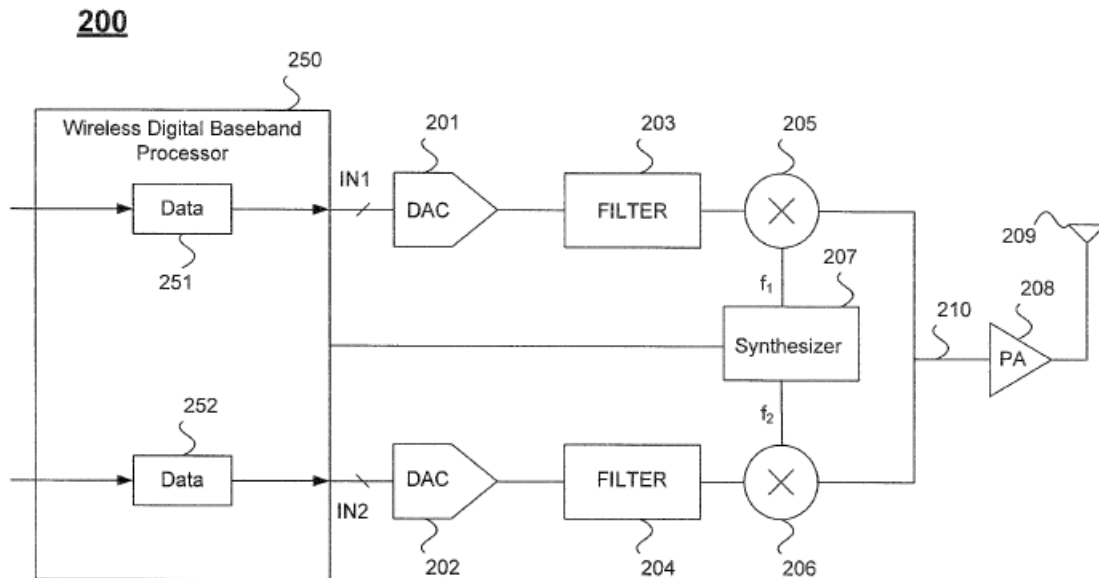


Fig. 2

Figure 2 of the '802 patent illustrates a wireless communication system according to an embodiment of the invention. Ex. 1001, 5:53–54, Fig. 2. As shown in Figure 2, baseband digital system 250 provides a first digital signal comprising first digital data 251 which is provided as IN1 and a second digital signal comprising second digital data 252 provided as IN2. *Id.* at 5:62–66. The first digital data 251 and second digital data 252 may be unrelated data streams or data from the same data stream. *Id.* at 6:7–9. Each of the first and second digital signals is transmitted to a digital to analog converter (DAC 201 and 202), a filter (203 and 204), and an up-converter (205 and 206). *Id.* at 6:10–26. The up-converters 205 and 206 each receive a first modulation signal having an RF center frequency (f_1 and f_2 ,

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respectively) from synthesizer 207 and generate first and second up-converted signals that are combined at the input to amplifier 208. *Id.* at 6:22–44, 6:57–60, 7:4–7. Amplifier 208 outputs an amplified up-converted signal comprising the first and second up-converted analog signals, and transmits this signal over antenna 209. *Id.* at 7:7–11.

Figure 3 of the '802 patent, reproduced below, illustrates an example of the frequency content of the signal transmitted from the system disclosed in Figure 2.

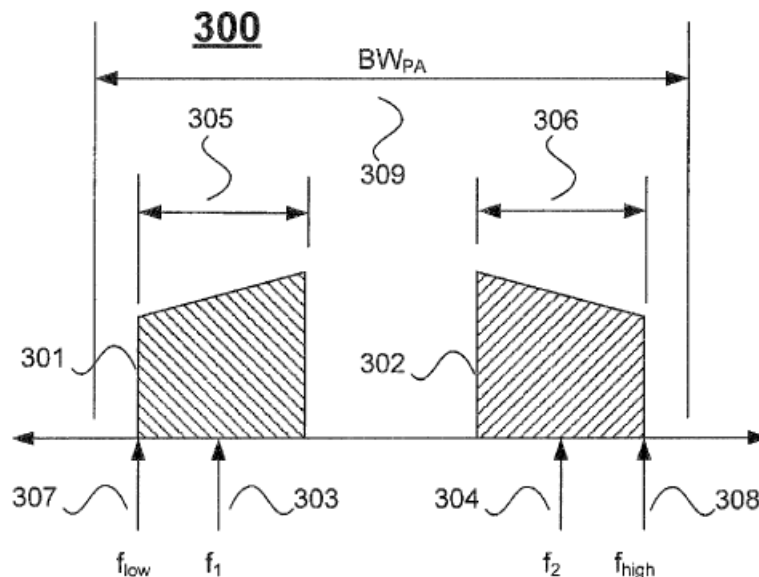


Fig. 3

Figure 3 of the '802 patent illustrates an example of the frequency content of the signal transmitted by the stem of Figure 2. Ex. 1001, 5:58–60, Fig. 3.

Figure 3 shows first up-converted analog signal 301 generated by up-converter 205, which has center frequency f_1 and frequency range 305, and second up-converted analog signal 302 generated by up-converter 206, which has center frequency f_2 and frequency range 306. *Id.* at 6:26–44. The frequency difference between f_1 and f_2 is greater than the sum of one-half of the first frequency range and one-half of the second frequency range, so that the up-converted signals do not overlap and cause distortion. *Id.* at 6:48–53.

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The first and second up-converted analog signals 301 and 302 may be transmitted by the antenna over bandwidth BW_{PA} 309. *Id.* at 7:9–14.

E. Illustrative Claims

Of the challenged claims, claims 1, 10, 17, and 24 are independent.

Claim 1 is illustrative and is reproduced below.

1. [pre] A method of transmitting information in a wireless communication channel comprising:

[1a] transmitting first information across a first frequency range using a wireless transmitter, the first frequency range having a first center frequency, a first highest frequency, and a first lowest frequency; and

[1b] simultaneously transmitting second information across a second frequency range using the same wireless transmitter, the second frequency range having a second center frequency, a second highest frequency, and a second lowest frequency.

Ex. 1001, 13:59–14:3 (bracketed paragraph identifiers added).

F. Applied References

Petitioner relies upon the following references:

Rick et al., U.S. Patent No. 8,693,525 B2, issued Apr. 8, 2014 (Ex. 1021, “Rick”);

Suzuki et al., US 2006/0276146 A1, published Dec. 7, 2006 (Ex. 1004, “Suzuki”);

Fernandez, US 2009/0052556 A1, published Feb. 26, 2009 (Ex. 1005, “Fernandez”);

Montejo et al., US 2005/0135312 A1, published June 23, 2005 (Ex. 1006, “Montejo”);

Jalali et al., U.S. Patent No. 6,952,454, published Oct. 4, 2005 (Ex. 1008, “Jalali”);

Chen et al., U.S. Patent No. 6,359,868, issued Mar. 19, 2002 (Ex. 1009, “Chen”);

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Etemad, U.S. Patent No. 8,036,702 B2, issued Oct. 11, 2011 (Ex. 1014, “Etemad”).

Pet. 3–4.

Petitioner submits the Declaration of Dr. Kevin C. Almeroth (Ex. 1003).

G. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 11–17 of the ’028 patent based on the following grounds:

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1	103(a) ¹	Rick
1–4, 6–8, 10, 13, 17, 21–22	103(a)	Suzuki
7–9, 22, 23	103(a)	Suzuki, Jalai
14, 24, 25	103(a)	Suzuki, Chen
6, 13, 21	103(a)	Suzuki, Etemad
1–4, 6–8, 10, 13, 17, 21, 22	103(a)	Fernandez, Montojo
7–9, 22, 23	103(a)	Fernandez, Montojo, Jalai
14, 24, 25	103(a)	Fernandez, Montojo, Chen
6, 13, 21	103(a)	Fernandez, Montojo, Etemad

Pet. 4.

II. DISCUSSION

A. Claim Construction

A claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b) (2020). The parties’ arguments

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), included revisions to 35 U.S.C. § 103 that became effective after the filing of the application that led to the ’802 patent. Therefore, we apply the pre-AIA version of 35 U.S.C. § 103.

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at this stage raise three claim construction issues: (1) whether the phrase “in a wireless communication channel” in the preamble of claims 1 and 10 is limiting; (2) whether the word “a” in “a wireless communication channel” requires the claimed method to be performed in *one* wireless communication channel; and (3) the proper construction of the term “wireless communication channel.” Prelim. Resp. 1–8; Pet. Prelim. Reply; PO Prelim. Sur-reply. These issues will be discussed in more detail below.

1. Whether the Phrase “in a Wireless Communication Channel” in the Preamble Is Limiting

Patent Owner argues that the phrase “in a wireless communication channel” in the preamble of claims 1 and 10 is limiting. Pet. 2. Patent Owner asserts that “claim 1 does not define a structurally complete invention in the claim body,” and therefore the preamble “is necessary to give life and meaning to the claim.” *Id.* According to Patent Owner, “[t]he ’802’s specification repeatedly explains that the invention is regarding a specific method within ‘a [wireless] communication channel.’” *Id.* at 2–3 (citing Ex. 1001, code (56), 1:61–63, 2:45–47, 6:60–62, 10:63–66, 12:14–15). “In fact,” Patent Owner contends, “the ’802 provides specific formulas to recover information based on the response of the different frequency ranges within a single communication channel.” *Id.* at 3 (citing Ex. 1001, 13:21–23).

Patent Owner also asserts that the Federal Circuit has explained that “statements of intended purpose in methods of using apparatuses,” such as the preamble here, “ha[ve] tended to result in a conclusion that such preamble language is limiting.” Prelim. Resp. 3 (quoting *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1341 (Fed. Cir. 2021)). “Without the preamble’s limitation that the specific method of transmission is ‘in a

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wireless communication channel,” Patent Owner argues, “the claim does not recite a complete structure, and would indiscriminately cover all transmission of information across two frequency ranges as claimed.” *Id.* See also PO Prelim. Sur-reply 1–2.

Petitioner disagrees that the phrase “a wireless communication channel” in the preamble is limiting.” Pet. Prelim. Reply 1–2. Petitioner argues that Patent Owner’s argument to the contrary “is belied by the fact that claim 17, which is an apparatus claim with nearly identical scope as claim 10’s method claim, does not recite ‘a wireless communication channel.’” *Id.* Thus, Petitioner asserts, because “‘a wireless communication channel’ is not structurally necessary for claim 17’s apparatus, it is not necessary for claim 10’s method, either.” *Id.* at 2. “Similarly,” according to Petitioner, “Claim 1’s recitation of simultaneously transmitting information across two frequency ranges is also found in claim 17, where again, there is no limitation that the transmission be ‘in a wireless communication channel.’” *Id.* “In addition,” Petitioner contends, Patent Owner “does not show that ‘a wireless communication channel’ is ‘necessary to provide antecedent basis or that the applicant placed clear reliance on the preamble during prosecution.’” *Id.* (citing *Summit 6, LLC v. Samsung Elecs. Co.*, 802, F3d 1283, 1292 (Fed. Cir. 2015)).

Petitioner further argues that the ’802 patent Specification “makes clear that ‘a wireless communication channel’ is not a structurally necessary limitation for method claims 1 and 10.” Pet. 2. “For example,” Petitioner contends, “Figures 6, 7A and 7B are the only figures that depict methods (and map to claims 1 and 10), yet their corresponding descriptions in the specification do not mention ‘a wireless communication channel,’” which

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“indicates that the claim bodies of claims 1 and 10 are structurally complete.” *Id.* (citing Ex. 1001, 5:27–31, 9:9–10:61).

Based on the present record, we preliminarily determine that Petitioner has made a sufficient showing for purposes of institution that the phrase “a wireless communication channel” in the preamble of claims 1 and 10 is not limiting. As the Federal Circuit has noted, “[g]enerally, a preamble is not limiting.” *Summit 6*, 802 F.3d at 1298. However, “a preamble limits the invention if it recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the claim.” *Catalina Mktg. Int’l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). “Conversely, a preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’” *Id.* (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)).

Based on the present record, we preliminarily agree with Petitioner that the body of claims 1 and 10 recite a structurally complete invention. Limitations [1a] and [1b] recite, *inter alia*, transmitting first information across a first frequency range using a wireless transmitter (which is a structure for transmitting the information), and simultaneously transmitting second information across a second frequency range using the same wireless transmitter. Patent Owner has not sufficiently explained why these limitations further require that the information be transmitted “in a wireless communication channel” to be structurally complete. Moreover, as Petitioner points out, claim 17 includes similar limitations (as well as limitations similar to those in claim 10) without requiring that the

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information be transmitted “in a wireless communication channel,” suggesting that this language is not needed to recite a structurally compete invention, and is not “essential structure or steps” that are “necessary to give life, meaning, and vitality” to the claims. *Compare* Ex. 1001, 16:19–23 and 16:27–36 (claim 17), *with id.* at 13:61–14:3 (claim 1) and 14:58–62 and 14:66–15:7 (claim 10).

Based on the present record, it also does not appear to us that the ’802 patent Specification describes that sending the first and second information “in a wireless communication channel” is an essential (or even important) element of the invention. Patent Owner points to the statement in the ’802 patent’s Abstract that “[e]mbodiments of the present invention transmit signals simultaneously over a communication channel at different RF center frequencies,” and the statement in column 1 that “[i]n one embodiment, the present invention includes a method of transmitting information in a wireless communication channel.” Prelim. Resp. 2–3 (citing Ex. 1001, code (57), 1:61–63). These sentences, however, refer to certain “embodiments” of the invention, and do not indicate that communication “in a wireless communication channel” is a necessary part of *all* embodiments of the invention. Additionally, Patent Owner does not point to any portions of the ’802 patent Specification that clearly state that communication “in a wireless communication channel” is important to the invention, that explain why communication “in a wireless communication channel” is necessary or beneficial, or even explain what it means for communication to occur “in a wireless communication channel” (as opposed to multiple wireless communication channels). *Id.* Moreover, as Petitioner points out, Figures 6, 7A, and 7B and the accompanying text describe embodiments of the method

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of the '802 patent, without ever requiring that the communications take place “in a wireless communication channel.” Ex. 1001, Figs. 6, 7A, 7B, 5:27–31, 9:9–10:61. And, while Patent Owner relies on the disclosure at column 13, lines 21–23 discussing recovering information from a received signal, this portion of the Specification does not explain why communication “in a wireless communication channel” is essential, and does not even use the term “wireless communication channel.” See Prelim. Resp. 3; Ex. 1001, 13:21–23.

Finally, we do not find that *Eli Lilly*, relied on by Patent Owner, compels a contrary result. In *Eli Lilly*, the preambles recited “[a] method for treating headache in an individual, comprising” administering an effective amount of a particular monoclonal antibody. *Eli Lilly*, 8 F.4th at 1335. The Federal Circuit found that these preambles were “not merely statements of effect but rather statements of intentional purpose for which the methods must be performed” because “the treatment of vasomotor symptoms such as migraine is central to the invention of the challenged patents” as “reflected in the extensive discussions of such treatment in every section of the patents’ written description.” *Id.* at 1342. The Federal Circuit also explained that the claims only reference such treatments in the preambles, and thus “the preambles are the portions of the claims that embody the essence of the claimed invention—methods for treating vasomotor symptoms.” *Id.* Additionally, the court noted, “[t]he preambles provide the only metric by which one practicing the claim could determine whether the amount administered is an ‘effective amount,’” as the body of the claims require. *Id.* Here, by contrast, the specification does not make clear that communication “in a wireless communication channel” is central to the invention, and the

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preamble is not necessary to provide a benchmark for practicing limitations set forth in the body of the claim.

Consequently, based on the present record, we preliminarily determine that the term “in a wireless communication channel” in the preambles of claims 1 and 10 is not limiting.

2. *Whether the Word “a” in “a Wireless Communication Channel” Requires the Method to Be Performed in One Wireless Communication Channel”*

Patent Owner argues that the phrase “in a wireless communication channel” also “requires that the claimed method be performed in a single ‘wireless communication channel.’” Prelim. Res. 5. Patent Owner acknowledges that “the indefinite article ‘a’ generally means ‘one or more’” in open-ended claims containing the transitional phrase “comprising,” but argues that this principle “does not apply where the article ‘a’ appears before ‘comprising,’” relying on *Convolve, Inc. v. Compaq Computer Corp.*, 812 F.3d 1313, 1321 (Fed. Cir. 2016). *Id.* Because the article “a” in the preamble appears before the term “comprising,” Patent Owner argues that “the claimed method must be performed within ‘*a* wireless communication channel,’ not multiple wireless communication channels.” *Id.* at 6.

Patent Owner also relies on *In re Varma v. International Business Machines Corp.*, 816 F.3d 1352 (Fed. Cir. 2016) to support its argument, arguing that the Federal Circuit in *Varma* construed “a statistical analysis request corresponding to two or more selected investments” to require a *single* request that corresponds to at least two investments. Prelim. Resp. 6–7 (citing *Varma* at 1362–1363). Patent Owner also points to *Varma*’s example that “a dog that rolls over and fetches sticks” cannot correspond to “two dogs, each able to perform just one of the tasks.” *Id.* at 7. According

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to Patent Owner, “[l]ike the hypothetical dog in *V[a]rma*, it would not suffice to have a portion of the claimed method performed in one ‘wireless communication channel’ and another portion of the claimed method performed in a different ‘wireless communication channel.’” *Id.* See PO Prelim. Sur-reply 3–4.

Finally, Patent Owner argues that “the specification repeatedly explains that the invention is directed at performing the claimed method in a single wireless channel.” Prelim. Resp. 8 (citing Ex. 1001, 1:61–63, 2:45–47, 6:60–62, 10:63–66, 12:14–15). Patent Owner further asserts that “the specification recites specific mathematical methods to recover information based on the responses of the different frequency ranges within a single communication channel.” *Id.* (citing Ex. 1001, 13:21–23).

Petitioner responds by arguing that the exceptions to the general rule that “a” or “an” in a patent claim means “one or more,” “are extremely limited: a patentee must evince a clear intent to limit ‘a’ or ‘an’ to ‘one.’” Prelim. Resp. 3 (citing *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008)). Petitioner also argues that Patent Owner “misunderstands the holding in *Convolve*,” because, in that case, the court based its decision on the fact that the term “a processor” in the preamble provided antecedent basis for the term “the processor” in the body of the claim, not on the fact that the term “a processor” appeared before the word “comprising.” *Id.* In contrast, Petitioner asserts, the court in *Convolve* held that “a processor” in claim 9 meant “one or more processors” because it did not provide antecedent basis for terms in the remainder of the claim. *Id.* Petitioner further argues that Patent Owner’s argument is not consistent with the ’802 patent Specification’s statement that the received signal “may be

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processed in separate analog receiver *channels* and combined digitally.” *Id.* at 4 (citing Ex. 1001, 10:51–53).

As noted above, we preliminarily determine that the preamble of claims 1 and 10 is not limiting. *See* § II.A.1, *supra*. Therefore, for purposes of institution, we need not determine whether the article “a” in “a wireless communication channel” in the preamble means “one or more” or “only one.” However, to the extent Patent Owner continues to advance this argument, we believe the record on this issue would benefit from further development during the trial, including, for example, further discussion as to: (1) the extent to which Federal Circuit caselaw interprets the term “a” differently when it appears before the term “comprising” in the preamble as opposed to being used in the body of the claim; (2) the significance of any differences between the relevant language in claims 1 and 10 and the claim language at issue in *Varma* requiring “a statistical analysis request *corresponding to* two or more selected investments”; and (3) other Federal Circuit cases concerning the issue of whether “a” means “one or more” that use language similar or analogous to that used in claims 1 and 10.

3. *The Proper Construction of “Wireless Communication Channel”*

Although Patent Owner argues that the prior art fails to teach performing the claimed method in a “wireless communication channel,” Patent Owner does not offer a construction of the term “wireless communication channel.” Prelim. Resp. 8–10; PO Prelim. Sur-reply 5. Petitioner also does not construe “wireless communication channel” in the Petition. Pet. 9. In its Preliminary Reply, Petitioner states that “[t]he ’802 patent discloses that, to the extent it is comprehensible, ‘a communication channel’ refers to a single transmission signal, and that it carries multiple

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‘carrier frequenc[ies],’” but does not provide a full claim construction analysis for this term. Pet. Prelim. Reply 5 (citing Ex. 1001, 10:63–66).

As noted above, we preliminarily determine that the preamble of claims 1 and 10 is not limiting, and therefore we need not construe the term “wireless communication channel” for purposes of this Decision. However, to the extent Patent Owner continues to assert that the preamble is limiting, the parties should propose constructions of “wireless communication channel” during the trial, along with a full claim construction analysis supporting their proposed constructions.

4. Other Terms

We determine that it is not necessary to provide an express interpretation of any other claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, objective evidence

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of non-obviousness.² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of prior art elements would have produced a predictable result has weight in the ultimate determination of obviousness. *Id.* at 416–417.

In an *inter partes* review, the petitioner must show with particularity why each challenged claim is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); 37 C.F.R. § 42.104(b) (2020). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the alleged invention would have had “at least a bachelor’s in EE/CE/CS, physics, or equivalent, and two years of experience with cellular telecommunications, radio-access network architectures, protocols and signal propagation in wireless networks.” Pet. 4 (citing Ex. 1003 ¶¶ 50–51). Petitioner further states that “[m]ore education can supplement practical experience and vice versa.” *Id.* Patent Owner does not offer a proposed level of ordinary skill at this stage of the proceeding. *See* Prelim. Resp.

² At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

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At this stage of the proceeding, we adopt Petitioner's assessment of the level of skill in the art, which is consistent with the '802 patent and the asserted prior art of record.

D. Ground 1: Obviousness of Claim 1 Based on Rick

Petitioner contends that claim 1 would have been obvious over Rick. Pet. 4, 12–16. Patent Owner disagrees, arguing that Rick does not perform the claimed method in “a wireless communication channel.” Prelim. Resp. 8–10.

1. Overview of Rick (Ex. 1021)

Rick discloses a “multi-carrier transmitter capable of transmitting on one or multiple frequency channels simultaneously.” Ex. 1021, code (57). The multi-carrier transmitter includes “at least one processor and a single radio frequency (RF) transmit chain.” *Id.* The processor(s) “may generate output chips for each of multiple frequency channels, digitally filter and upsample the output chips for each frequency channel to obtain filtered samples, and digitally upconvert the filtered samples for each frequency channel to a different frequency to obtain upconverted samples.” *Id.* The processor(s) “may then combine the upconverted samples for the multiple frequency channels to obtain composite samples, perform pre-distortion on the composite samples for I/Q [(in-phase and quadrature signal)] mismatch compensation, and upsample the pre-distorted samples to obtain output samples,” which “may be converted to an analog signal with a wideband DAC [(digital to analog converter)].” *Id.* The RF transmit chain may then “process the analog signal to generate an RF output signal.” *Id.*

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2. *Analysis of Independent Claim 1*

a) *1[pre]: “[a] method of transmitting information in a wireless communication channel comprising:”*

As discussed previously, Petitioner argues that the preamble of claim 1 is not limiting. Pet. Prelim. Reply 1–2. Petitioner further asserts that “Rick discloses ‘[a] multi-carrier transmitter capable of transmitting on one or multiple frequency channels simultaneously’ and that the transmitter ‘may be used for various wireless communication systems.’” *Id.* at 12 (citing Ex. 1021, 1:48–50, 2:38–39; Ex. 1003 ¶ 82).

As discussed above, Patent Owner argues that the preamble of claim 1 is limiting. Prelim. Resp. 2–5. Patent Owner also argues that Rick does not disclose the preamble because it does not disclose that both frequency ranges are transmitted via a single communication channel. *Id.* at 8–10.

As discussed above, we preliminarily determine that the preamble of claim 1 is not limiting. *See* § II.A.1, *supra*. Thus, Rick need not disclose the preamble in order to satisfy claim 1.³

³ We also note that, even if the preamble is limiting, under the interpretation that Petitioner advances (as discussed above), “a wireless communication channel” can include one or more wireless channels. *See* § II.A.2, *supra*. Under this interpretation, Petitioner sufficiently shows that Rick discloses the preamble for purposes of institution by describing “[a] multi-carrier transmitter capable of transmitting on one or more frequency channels simultaneously” and “transmission of N CDMA signals,” each of which “may carry any type of data for any service.” *See* Pet. 12–13 (citing Ex. 1021, 1:48–50, 2:38–39, 3:19, 3:35–36; Ex. 1003 ¶ 82).

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- b) [1a]: “transmitting first information across a first frequency range using a wireless transmitter, the first frequency range having a first center frequency, a first highest frequency, and a first lowest frequency; and”

Petitioner argues that “Rick discloses ‘transmission of N CDMA signals,’ each of which ‘may carry any type of data for any service.’” Pet. 12–13 (citing Ex. 1021, 3:19, 3:35–36). “The data for one of the CDMA signals,” Petitioner asserts, “is a *first information*.” *Id.* at 13 (citing Ex. 1003 ¶¶ 83–84). These CDMA signals, according to Petitioner, include a first frequency range and a second frequency range, as shown in Petitioner’s annotated version of Rick’s Figure 1, reproduced below.

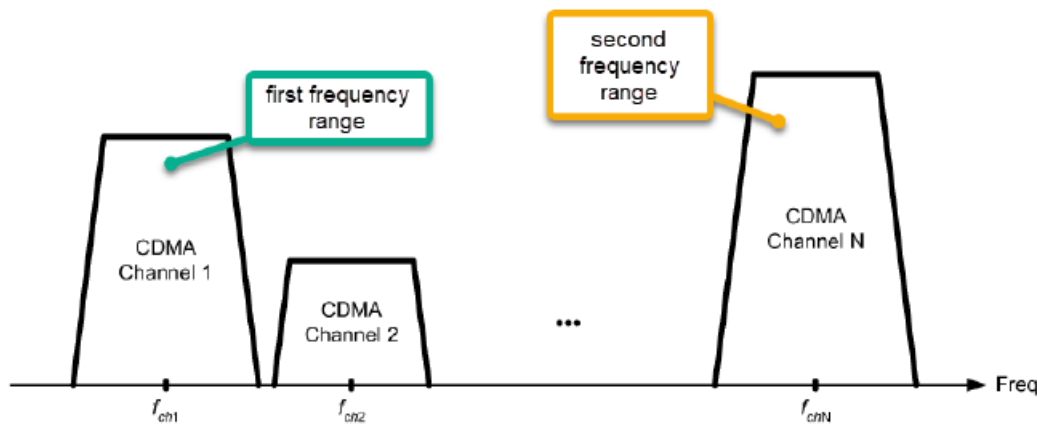


FIG. 1

Petitioner’s annotated version of Rick’s Figure 1 shows the “first frequency range” and the “second frequency range.” Pet. 13.

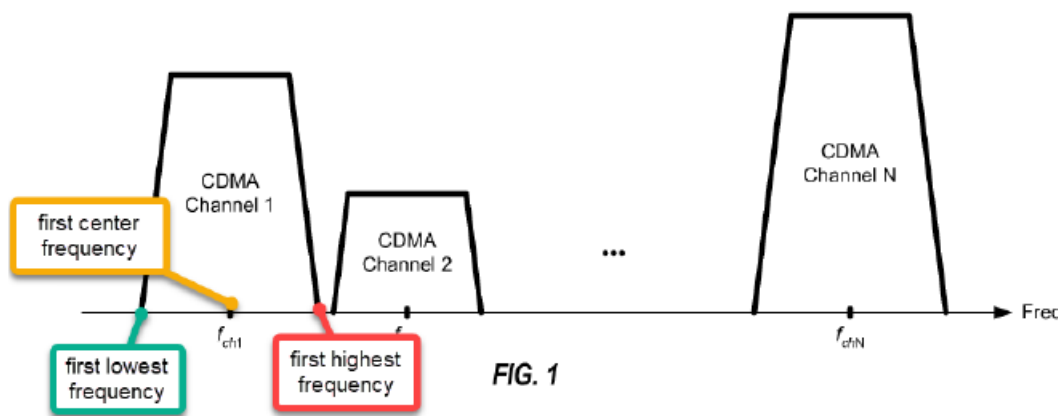
Petitioner argues that, as shown in its annotated version of Figure 1, Rick’s CDMA Channel 1 is the claimed “first frequency range” having a “first center frequency” of f_{ch1} , and that one of ordinary skill would understand that the term “carrier frequency” refers to the center frequency of the carrier channel. Pet. 13 (citing 1021, 3:21–22; Ex. 1023, 86; Ex. 1003 ¶ 85). Petitioner also asserts that Rick teaches that the CDMA signal is up-converted to the carrier frequency, and one of ordinary skill would understand that such up-conversion raises the frequency center of a signal to

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a higher frequency center. *Id.* at 13–14 (citing Ex. 1021, 4:11–16; Ex. 1003 ¶ 85). Petitioner further contends that the CDMA signal is transmitted via an antenna, *i.e.*, a wireless transmitter. *Id.* at 13 (citing Ex. 1021, 4:50–51).

Petitioner also argues that Rick discloses that the first frequency range includes a first center frequency, a first lowest frequency, and a first highest frequency, as illustrated in its annotated version of Rick’s Figure 1, reproduced below.



Petitioner’s annotated version of Rick’s Figure 1 shows the “first center frequency,” “first lowest frequency,” and “first highest frequency” of the first frequency range. Pet. 14 (citing Ex. 1021, 3:16–17, Fig. 1; Ex. 1003 ¶ 86).

Patent Owner does not present arguments regarding this limitation. *See* Prelim. Resp. 1–10.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

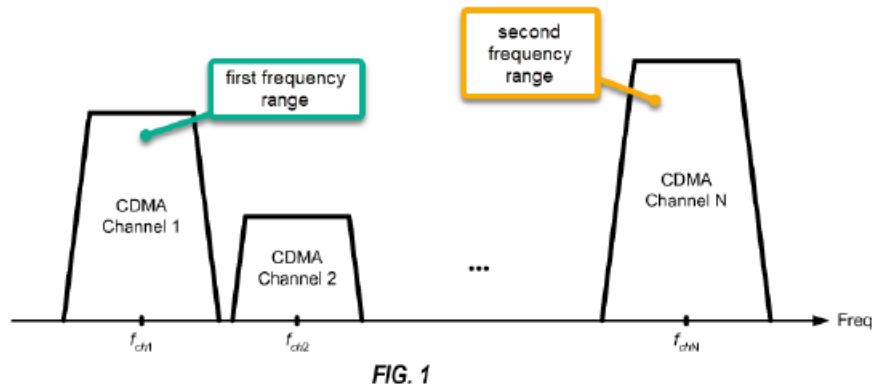
- c) [1b]: “simultaneously transmitting second information across a second frequency range using the same wireless transmitter, the second frequency range having a second center frequency greater than the first center frequency, a second highest frequency, and a second lowest frequency.”

Petitioner argues that the claimed “second information” is either the CDMA data on channel 2 or the CDMA data on channel N. Pet. 15 (citing

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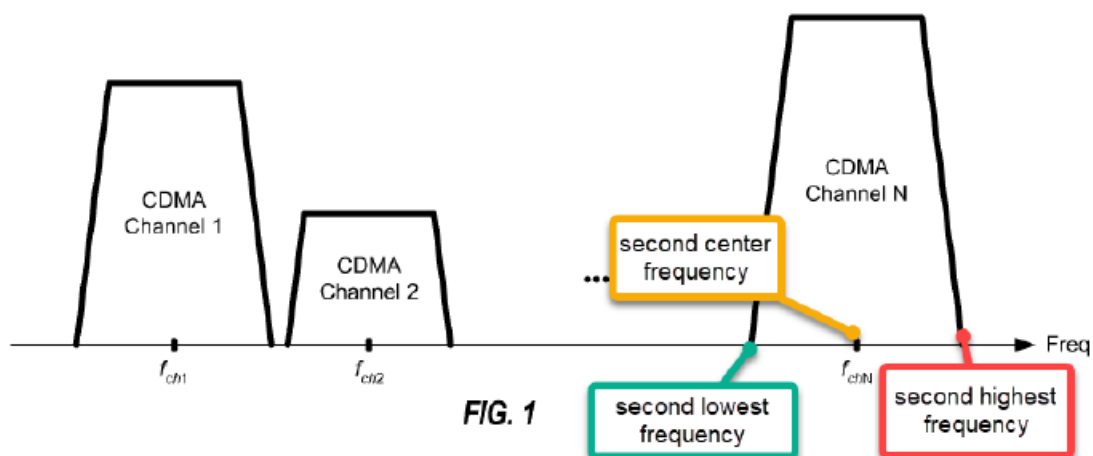
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Ex. 1003 ¶¶ 88–89). Petitioner provides an annotated version of Rick’s Figure 1, reproduced below, showing the first and second frequency ranges.



Petitioner’s annotated version of Rick’s Figure 1 shows the “first frequency range” and the “second frequency range.” Pet. 15.

Petitioner argues that Rick discloses transmitting these multiple CDMA signals simultaneously because they are sent in the frequency domain. Pet. 15. Petitioner further asserts that the signal carrying the first and second information is transmitted via an antenna, *i.e.*, the same wireless transmitter. *Id.* (citing Ex. 1021, 4:50–51). Petitioner also argues that Rick discloses that the second frequency range includes a second center frequency, a second lowest frequency, and a second highest frequency, as illustrated in its annotated version of Rick’s Figure 1, reproduced below.



Petitioner’s annotated version of Rick’s Figure 1 shows the “second center frequency,” “second lowest frequency,” and “second highest frequency” of

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the second frequency range. Pet. 16 (citing Ex. 1021, 3:16–17, Fig. 1; Ex. 1003 ¶ 91).

Petitioner also argues that Figure 1 depicts f_{chN} (the second center frequency” as greater than f_{ch1} (the first center frequency). *Id.* at 16 (citing Ex. 1021, 3:16–17).

Patent Owner does not present arguments regarding this limitation. *See* Prelim. Resp. 1–10.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

d) Summary for Claim 1

For the foregoing reasons, we are persuaded that Petitioner’s cited evidence and reasoning demonstrates a reasonable likelihood that Petitioner would prevail in its contentions regarding claim 1.

E. Remaining Grounds

Because Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to claim 1, we grant institution of trial on all challenged claims and grounds raised in the Petition. *See* 35 U.S.C. § 314 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (indicating that a decision whether to institute an *inter partes* review “require[s] a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”). However, to provide guidance to the parties, we will address Patent Owner’s remaining arguments below.

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1. *Grounds 2–5*

a) *Whether Suzuki Discloses the Preamble of Claims 1 and 10*

Patent Owner argues that Petitioner fails to show that Suzuki discloses or renders obvious the claimed method being performed “in a wireless communication channel,” as the preambles of claims 1 and 10 recite.

Prelim. Resp. 12–13. As discussed above, we preliminarily determine that the preambles of claims 1 and 10 are non-limiting. *See* § II.A.1, *supra*.

Therefore, we do not agree with Patent Owner that Petitioner’s showing as to claims 1 and 10 is deficient on this basis.

b) *Whether Figure 6 of Suzuki Discloses First/Second Digital Signals Comprising First/Second Data “To Be Transmitted” in Claims 10 and 17*

Patent Owner argues that Suzuki’s Figure 6 does not disclose or render obvious either claim 10 or 17 because it fails to disclose first/second digital signals comprising first/second data “to be transmitted.” Prelim. Resp. 14.

Claim 10 recites “receiving a first digital signal comprising first data *to be transmitted*” and “receiving a second digital signal comprising second data *to be transmitted*,” and claim 17 includes similar limitations. Ex. 1001, 14:44–47; 16:2–5 (emphasis added). Petitioner argues that these signals are disclosed in Suzuki’s Figure 6, and provides an annotated version of that figure, reproduced below, to illustrate its argument.

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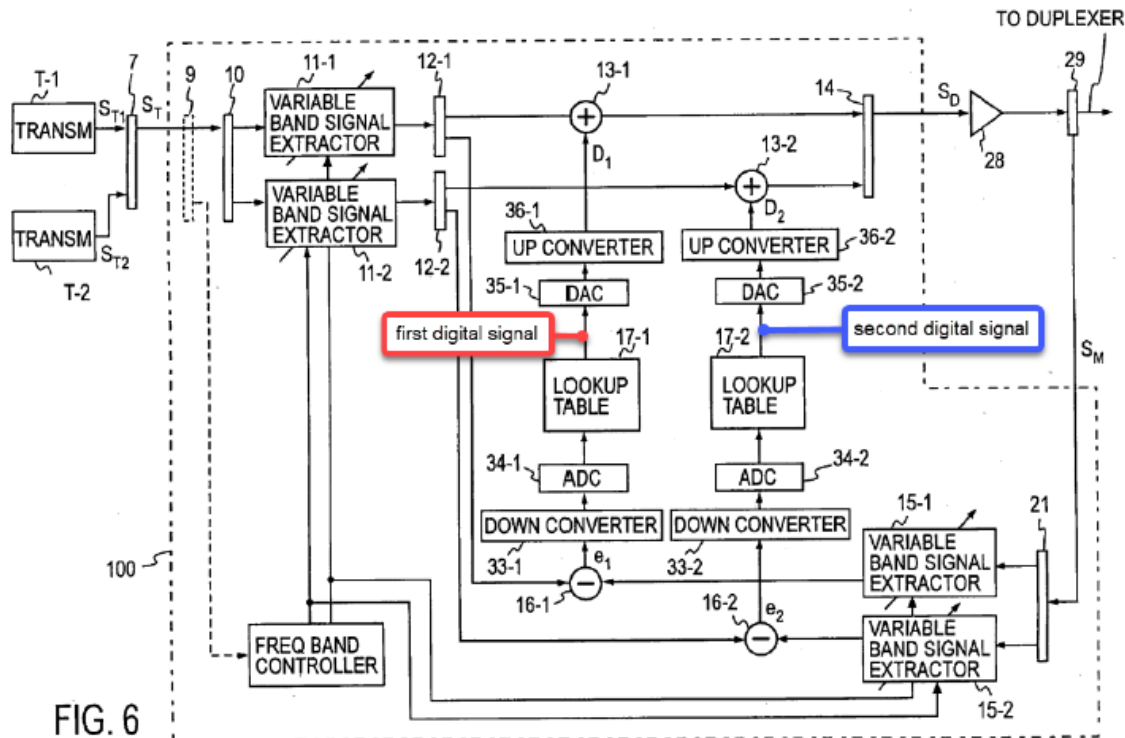


FIG. 6

Petitioner's annotated version of Suzuki's Figure 6 shows the "first digital signal" in red and the "second digital signal" in blue. Pet. 31, Fig. 6. Petitioner argues that "input signal S_T including dual frequency bands of transmitting signals is divided into two input side variable band signal extractors 11-1 and 11-2 at the divider 10 and transmitting signals in dual frequency bands are extracted." *Id.* at 30–31 (citing Ex. 1004 ¶ 45). Then, Petitioner asserts, "[t]he difference between the extracted symbols and monitor signals from S_M is calculated, and used to receive predistortion compensation data from lookup tables 17–1 and 17-2, which are the *first* and *second digital signal*, respectively." *Id.* at 31 (citing Ex. 1004 ¶ 46). According to Petitioner, "Suzuki discloses these are digital signals because 'tables 17-1 and 17-2 are implemented through digital signal processing.'" *Id.* (citing Ex. 1004 ¶ 63). "The predistortion compensation data," Petitioner contends, "*will be transmitted* with their respective frequency band as a predistorted signal." *Id.* (citing Ex. 1003 ¶ 131).

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Patent Owner responds that Petitioner's argument fails because the predistortion signals identified by Petitioner as the first and second digital signals "are not transmitted and do not contain data 'to be transmitted.'" Prelim. Resp. 14. "Rather," Patent Owner asserts, "Suzuki is clear that the signals from lookup tables 17-1 and 17-2 are merely pre-distortion signals that are cancelled in amplifier 28 prior to any transmission." *Id.* at 15 (citing Ex. 1004 ¶¶ 1, 3). Specifically, according to Patent Owner, the output of lookup tables 17-1 and 17-2 are pre-distortion components D_1 and D_2 that are intended to compensate for the distortion caused by the power amplifier 28. *Id.* at 15–16 (citing Ex. 1004 ¶ 63). "[A]dders 13-1 and 13-2," Patent Owner contends, add the distortion compensation data D_1 and D_2 to the underlying signal that is first predistorted and then amplified (cancelling the predistortion) prior to transmission." *Id.* (citing Ex. 1004 ¶¶ 46, 47). Thus, Patent Owner argues: (1) distortion compensation data D_1 and D_2 are not transmitted by the transmitter because they are cancelled by the distortion caused by the power amplifier when the signal is amplified before transmission, and (2) distortion compensation data D_1 and D_2 also do not contain data to be transmitted but instead merely contain distortion compensation components that are cancelled out before transmission. *Id.* at 16–17.

Based on the present record, Patent Owner's arguments that distortion compensation data D_1 and D_2 (which Petitioner points to as the first and second digital signals) do not contain data to be transmitted, and are not actually transmitted as required by the claims, appear reasonable and consistent with Suzuki's disclosure. During the trial, Petitioner may further

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address why D_1 and D_2 , which Petitioner identifies as the claimed first and second digital signals, include “data to be transmitted” as the claims require.

c) Whether Figure 8 of Suzuki Discloses the Up-Converted Analog Signals and Frequency Ranges as Claimed in Claims 10 and 17

Patent Owner argues that Petitioner fails to show that Suzuki’s Figure 8 discloses or renders obvious claims 10 and 17 because: (1) it does not disclose two distinct up-converted analog signals as claimed, and (2) Suzuki’s up-converted analog signals do not contain two distinct frequency ranges with the claimed properties. Prelim. Resp. 17.

With respect to the first argument, claim 10 recites up-converting the first and second analog signals to first and second RF center frequencies to produce first and second up-converted analog signals, and claim 17 recites similar limitations. Ex. 1001, 14:56–15:7; 16:16–36. Petitioner argues that these signals are disclosed in Suzuki’s Figure 8, and provides an annotated version of that figure, reproduced below, to illustrate its argument.

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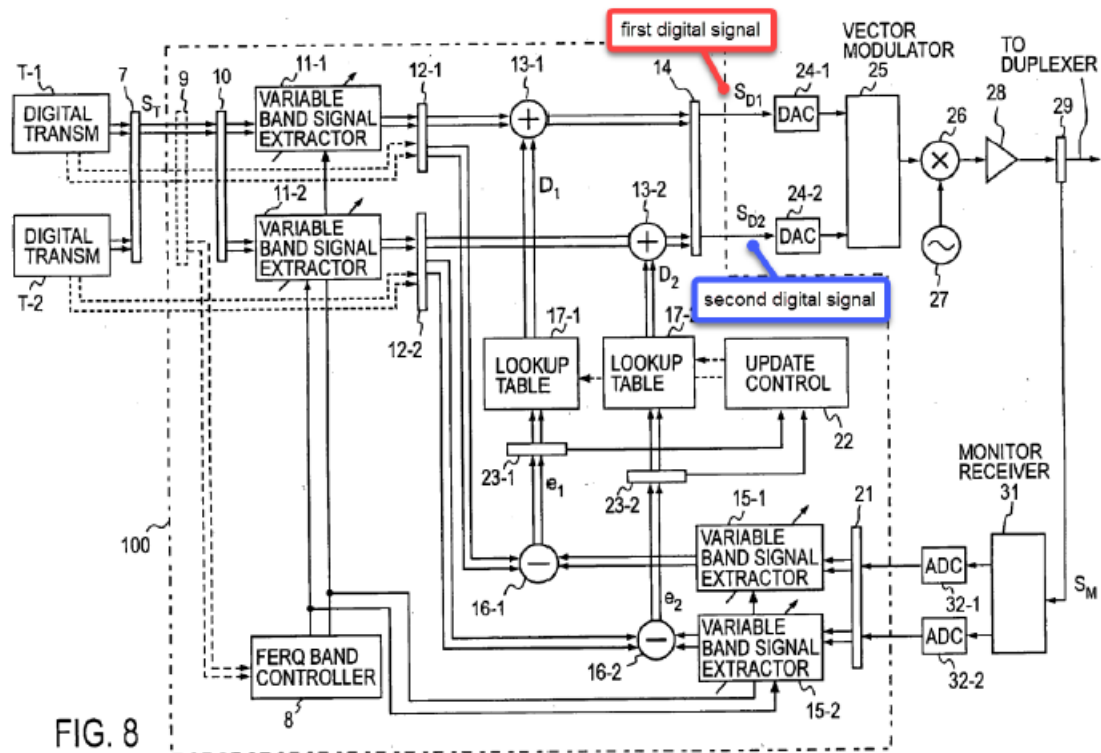


FIG. 8

Petitioner's annotated version of Suzuki's Figure 8 shows the "first digital signal" in red and the "second digital signal" in blue. Pet. 32, Fig. 8.

Petitioner argues that Figure 8 shows first and second digital signals in the form of S_{D1} and S_{D2} , respectively. Pet. 32 (citing Ex. 1003 ¶ 132).

Specifically, Petitioner contends that each of the extracted signals from the input signal are added at adders 13-1 and 13-2 to predistortion data from lookup tables 17-1 and 17-2, and are combined at combiner 14 to generate signals S_{D1} and S_{D2} , which are received by DACs 24-1 and 24-2 and will be transmitted by an antenna. *Id.* (citing Ex. 1003 ¶¶ 48, 58).

Patent Owner responds that the outputs of DAC 24-1 and DAC 24-2 are not separately up-converted to produce a "first" and "second" up-converted signal, as the claims require, but instead are combined in Vector Modulator 25 to produce a single combined signal, which is then transmitted to up-converter 26 to produce a single up-converted signal. Prelim. Resp. 19

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(citing Ex. 1004 ¶ 58). Patent Owner further argues that Petitioner relies on Suzuki's Figure 13A to show the two distinct up-converted frequency ranges of claims 10 and 17, but Suzuki never discloses that its Figure 13A frequency profile applies to the output signal of Figure 8's predistorter. *Id.* at 21–24.

Based on the present record, Patent Owner's argument that the circuit of Suzuki's Figure 8 does not separately up-convert the signals Petitioner identifies as the first and second analog signals (the outputs of DAC 24-1 and DAC 24-2) appears reasonable and consistent with the disclosure of Suzuki. Petitioner may address this argument during the trial, as well as Patent Owner's argument that the frequency ranges of Figure 13 do not apply to the circuit of Figure 8.

d) Whether the Combination of Suzuki and Chen Teaches Claim 24

Claim 24 requires a "first down-converter" that outputs a "first down-converted signal" and a "second down-converter" that outputs a "second down-converted signal," as well as a filter that "receives the first and second down converted signals." Ex. 1001, 17:4–18:8.

Petitioner argues that Chen teaches first and second down-converters that provide their output to a filter, and provides an annotated version of

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Chen's Figure 6, reproduced below, to illustrate this argument.

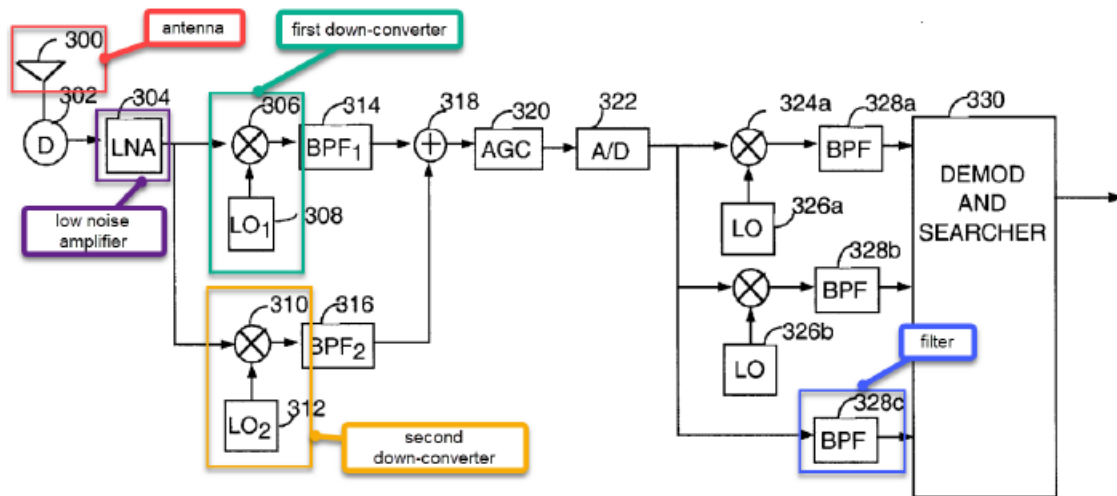


FIG. 6

Petitioner's annotated version of Chen's Figure 6 shows a first down-converter (green), a second down converter (yellow), and a filter (blue).

Pet. 71; Ex. 1009, Fig. 6.

More specifically, Petitioner argues that Chen's mixer 306 connected to local oscillator circuit LO₁ is a "first down-converter circuit," and mixer 310 connected to local oscillator circuit LO₂ is a "second down converter circuit." Pet. 67–69. According to Petitioner, the outputs of these circuits "are, after downconversion, 'already at baseband' and '*provided directly* to filter 328c.'" *Id.* at 70 (citing Ex. 1009, 14:13–15; Ex. 1003 ¶ 220).

Patent Owner responds that the analog outputs of Chen's down-converters 306 and 310 are not received by Chen's filter 328, because they first converted to digital signals in the A/D converter 322, and those digital signals are provided to the filter. Prelim. Resp. 25–31.

Resolution of this issue would benefit from further development during the trial. During the trial, the parties may address what it means for the filter to "receive[] the first and second down-converted signals," as claim 24 requires, and whether an A/D conversion of the down-converted

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signals before they are provided to the filter takes Figure 6 outside of the claim.

2. *Grounds 6–9*

a) *Whether Fernandez Discloses the Preamble of Claims 1 and 10*

Patent Owner argues that Petitioner fails to show that Fernandez discloses or renders obvious the claimed method being performed “in a wireless communication channel,” as the preambles of claims 1 and 10 recite. Prelim. Resp. 33–34. As discussed above, we preliminarily determine that the preambles of claims 1 and 10 are non-limiting. *See* § II.A.1, *supra*. Therefore, we do not agree with Patent Owner that Petitioner’s showing as to claims 1 and 10 is deficient on this basis.

b) *Whether Fernandez Discloses “a Baseband Digital System” That Provides a First and Second Baseband Signal (Claim 17)*

Patent Owner argues that Fernandez does not disclose “a baseband digital system” that provides a first and second baseband signal as required by claim 17. Prelim. Resp. 34–37.

Claim 17 recites “a baseband digital system for providing a first digital signal comprising first data to be transmitted and a second digital signal comprising second data to be transmitted.” Ex. 1001, 16:2–5. Petitioner argues that Fernandez discloses a “baseband digital system,” citing in support the statement in Fernandez’s paragraph 6 that the system can “upconvert[] baseband signal[s]” and the statement in paragraph 11 that “a general method is provided to increase a digitally synthesized signal’s bandwidth by frequency interleaving multiple (i.e., at least 2) digitally synthesized signal sources of narrower bandwidth.” Pet. 96–97.

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Patent Owner responds that the portion of Fernandez cited by Petitioner “only discloses the ‘[s]tandard notation for complex baseband and passband signals’” or, in other words, “the mathematical formula for representing a baseband signal.” Prelim. Resp. 35 (citing Ex. 1005 ¶ 6). However, Patent Owner asserts, Fernandez “says nothing whatsoever about ‘a baseband digital system,’ much less one that provides the claimed first and second digital signals.” *Id.* Patent Owner acknowledges that the Petition identifies in Fernandez’s Figure 2A first and second data signals each being fed to a “Baseband and Upconversion DSP, DAC, I/Q modulation, filtering, amplification” signal generator. *Id.* at 36. However, according to Patent Owner, this figure does not disclose where these first and second data signals originate from, and Petitioner does not identify disclosure in Fernandez indicating that they are sent from a “baseband digital system.” *Id.* Patent Owner also argues that Fernandez’s paragraph 11, cited in the Petition, is describing the “present invention,” while Figure 2A is part of the discussion of the admitted prior art, and Petitioner does not demonstrate why or how these disclosures would be combined. *Id.* at 37 (citing Ex. 1005 ¶¶ 5, 6, 8, 9, Figs. 1, 2A–2B).

This issue would benefit from further development during the trial. In particular, Petitioner may point out with greater specificity what disclosure it is relying on to teach or suggest the “baseband digital system,” and flesh out any inherency or obviousness arguments it is relying on. The parties may also consider proposing a construction for the term “baseband digital system.”

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c) *Whether One of Ordinary Skill Would Have Been Motivated to Combine Fernandez and Montojo as Proposed (Claims 10, 17)*

Claim 10 recites “combining the first up-converted analog signal and the second up-converted analog signal to produce a combined up-converted signal” and then “amplifying the combined up-converted signal in a power amplifier resulting in an amplified combined up-converted signal,” and claim 17 includes similar limitations. Ex. 1001, 15:8–13, 16:37–42.

Petitioner argues that, in Fernandez, “each input signal is amplified using its own amplifier, rather than a single amplifier after the signals are combined,” but it would have been obvious to combine Fernandez with Montojo, which “expressly discloses combining multiple signals into a single signal amplified using a single amplifier.” Pet. 74. Relying on Dr. Almeroth, Petitioner argues that one of ordinary skill would have been motivated to use a single amplifier based on Fernandez’s disclosure alone as a matter of design preference because a single amplifier has the advantage of lower complexity, provides only a single potential point of failure, and has a lower cost. *Id.* at 74–75 (citing Ex. 1003 ¶ 235).

Petitioner also argues that “[t]hese well-known benefits” of using a single amplifier “are further underscored by Montojo, which teaches generating a multi-carrier signal and explains that while ‘multiple power amplification circuits, each dedicated to one carrier and each including a power amplifier’ is an option, this runs against ‘limitations on space, manufacturing cost, power consumption and other factors,’ which ‘dictate the need to share resources among the carriers, including power amplification circuitry.’” Pet. 76 (citation omitted) (citing Ex. 1006 ¶ 5; Ex. 1003 ¶ 236). In light of these issues, Petitioner asserts, “Montojo teaches ‘*it would be advantageous* to utilize a *single power amplifier* for

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transmission of a plurality of carriers transmitted by a multi-carrier terminal.” *Id.* (citing Ex. 1006 ¶ 5). Relying on Dr. Almeroth, Petitioner contends that one of ordinary skill “would have known that using a single amplifier would achieve these benefits, including lower complexity, single (as opposed to multiple) potential points of failure, and lower cost,” as well as “reduction in space usage and power consumption.” *Id.* (citing Ex. 1003 ¶ 236). Petitioner further argues that one of ordinary skill “would have reasonably expected success in modifying Fernandez to use a single amplifier and antenna based either on Fernandez’s disclosure alone or in combination with Montojo,” and that “[u]sing a single amplifier was well-known, as shown by Montojo, which teaches how to implement a single amplifier for multi-carrier transmissions.” *Id.* at 77 (citing Ex. 1006 ¶¶ 21, 42, Fig. 5; Ex. 1003 ¶ 237).

Patent Owner responds that Petitioner has failed to show why and how one of ordinary skill would have modified Fernandez in view of Montojo. Prelim. Resp. 39. According to Patent Owner, “Montojo explains that even though it may be desirable to share an amplifier among different carriers, it is not practical to do so if all carriers are to be amplified based on their needs.” *Id.* (citing Ex. 1006 ¶ 7). For example, Patent Owner cites Montojo’s disclosure that, “[i]f a multi-carrier terminal has a single power amplifier for simultaneous transmission of different types of carrier signals, the power amplifier may be subject to power constraints imposed by spectral emission requirements, by on-board battery capacity, and also by any priority among the carriers.” *Id.* (quoting Ex. 1006 ¶ 7). “To address this problem,” Patent Owner contends, “Montojo discloses an apportionment system where the power amplifier amplifies the highest priority carrier

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according to its needs and will amplify the next priority carrier(s) only to the extent any amplification power is left over.” *Id.* (citing Ex. 1006 ¶¶ 9, 10, 45). According to Patent Owner, “Petitioner has not shown if Montojo’s priority-based power amplifier would be desirable or even functional in a system such as Fernandez, which is why Fernandez discloses that each signal generator has its own power amplifier to begin with.” *Id.* at 40. Indeed, Patent Owner argues that Fernandez discloses a wideband signal generated by summing together narrow band signals which are “substantially equally amplified,” and there is no showing how such a system would work with Montojo’s approach of amplifying based on priority. *Id.* at 40–41 (citing Ex. 1005, Figs. 2A, 2B).

Based on the present record, we find that Petitioner and Dr. Almeroth have provided a sufficient motivation for purposes of institution to replace Fernandez’s multiple amplifiers for each input signal with a single amplifier for the multiple summed signals in order to provide the advantage of lower complexity, a single potential point of failure, and lower cost. However, Patent Owner’s argument that Petitioner does not explain in detail how Montojo’s system of assigning priority of amplification to a particular carrier would be applied to Fernandez’s system, which substantially equally amplifies all signals, appears worthy of further consideration. Petitioner and Dr. Almeroth may wish to further address this point during the trial.

d) Whether the Combination of Fernandez and Chen Teaches Claim 24

Patent Owner argues that the combination of Fernandez and Chen fails to disclose a filter that receives the up-converted signals output from the first and second claimed up-converters for the same reasons set forth with respect to the Suzuki-Chen combination. Prelim. Resp. 44. Our

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comments regarding the application of the Suzuki-Chen combination to claim 24 apply equally to the application of the Fernandez-Chen combination to that same claim in this ground. *See* § II.E.1(d), *supra*.

F. Discretionary Denial Under 314(a)/Fintiv

Patent Owner argues we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution of *inter partes* review in view of the parallel district court proceeding. Prelim. Resp. 44–58. Petitioner disagrees. Pet. 101–102. We address the parties’ arguments regarding discretionary denial below.

Under Section 314(a), the Director has discretion to deny institution. *See* 35 U.S.C. § 314(a) (stating “[t]he Director *may not* authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition”) (emphasis added); *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) (“[Section] 314(a) invests the Director with discretion on the question whether to institute review.” (emphasis omitted)); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *Harmonic Inc. v. Avid Tech, Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”).

In determining whether to exercise this discretion based on a related litigation, the Board assesses all relevant circumstances, including the merits, to balance considerations such as system efficiency, fairness, and patent quality. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11

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(PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”); *NHK Spring Co. v. Intriplex Techs., Inc.*, IPR2018-00752, Paper 8 at 19–20 (PTAB Sept. 12, 2018) (precedential). We consider six factors as part of this balanced assessment when determining whether to use our discretion to deny institution:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Fintiv, Paper 11 at 5–6. In evaluating these factors, we “take[] a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* at 6.

On June 21, 2022, the Director issued an Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (“Interim *Fintiv* Guidance”).⁴ The Interim *Fintiv* Guidance provides “several clarifications” to “the PTAB’s current application of *Fintiv* to discretionary denial where there is parallel litigation” in response to

⁴ The Interim *Fintiv* Guidance is available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

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comments received from stakeholders in response to a Request for Comments. Interim *Fintiv* Guidance 2.

We now apply the six factors to the facts and circumstances present here.

1. Fintiv Factor 1: Stay in the Parallel Proceeding

Under the first *Fintiv* factor, we consider “whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted.” *Fintiv*, Paper 11 at 6. Patent Owner contends that this factor weighs in favor of denial because “a stay has not been sought or granted, and Petitioner has not presented any evidence that a stay would be granted if this proceeding is instituted.” Prelim. Resp. 47. Patent Owner also asserts that the district judge would be unlikely to sever and stay the allegations concerning the ’802 patent when there are other patents involved in the litigation. *Id.* at 46–47. Petitioner argues that the district court has not indicated it will grant or deny a stay, and this factor should be considered neutral. Pet. 101.

We will not attempt to predict how the district court in the parallel district court proceeding would proceed if a stay is requested because the court may determine whether or not to stay any individual case, including the related one, based on a variety of circumstances and facts beyond our control and to which the Board is not privy. *Sand Revolution II, LLC v. Cont’l Intermodal Grp. - Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) (“*Sand Revolution*”). Accordingly, we find that factor 1 is neutral.

2. Fintiv Factor 2: Trial Date in the Parallel Proceeding

Under the second *Fintiv* factor, we consider the “proximity of the court’s trial date to the Board’s projected statutory deadline for a final

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written decision.” *Fintiv*, Paper 11 at 6. Petitioner states that “[j]ury selection is scheduled for May 5, 2025, approximately three months before the Board’s FWD deadline.” Pet. 101–102. Patent Owner argues that “the deadline for a final written decision in this IPR is September 14, 2025,” and “[t]he trial date is set for May 5, more than four months⁵ before the FWD deadline here.” Prelim. Resp. 47. Patent Owner also asserts that the district court’s trial date “is consistent with the Federal Court Management Statistics for the Eastern District of Texas,” which “indicate that the average time to trial for the Eastern District of Texas for the 12-month period ending December 31, 2023 is listed as 21.4 months, which is even less than the approximately 23-month period from filing to the trial date set by the district court.” *Id.* at 47–48 (citing Ex. 2002 (trial statistics); Ex. 2003 (docket indicating the complaint was filed on June 6, 2023); Ex. 2001 (docket control order indicating the trial is scheduled for May 5, 2025)).

Because the current trial date in the parallel district court proceeding is approximately four months before the deadline for our final written decision, we find that factor 2 weighs in favor of exercising discretion to deny institution.

3. *Fintiv Factor 3: Investment by the Court and the Parties in the Parallel Proceeding*

Under the third *Fintiv* factor, we consider the “investment in the parallel proceeding by the court and the parties.” *Fintiv*, Paper 11 at 6.

⁵ The discrepancy between the different time frames offered by Petitioner and Patent Owner for the final written decision in this IPR appears to be due to the fact that the Petition was filed on February 26, 2024, but the Board did not issue a Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response until March 14, 2024. Papers 3, 4.

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According to the docket control order from the district court submitted by Patent Owner, claim construction briefing is to commence on October 2, 2024, the claim construction hearing is set for November 13, 2024, fact discovery is set to close on November 22, 2024, and expert discovery is set to close on January 21, 2025. Ex. 2001 (docket control order). Thus, claim construction briefing, the claim construction hearing, the close of fact discovery, and expert discovery will all occur after our institution date in this case, and there is no indication that the district court will have spent significant resources on unpatentability issues in the case by the time of institution. Because of the significant investment that remains in the parallel district court proceeding, we find that factor 3 weighs against exercising discretion to deny institution.

4. Fintiv Factor 4: Overlap Between Issues Raised in the Petition and Parallel Proceeding

Under the fourth *Fintiv* factor, we consider the “overlap between issues raised in the petition and in the parallel proceeding.” *Fintiv*, Paper 11 at 6. Under this factor, Petitioner argues that it “challenges more claims than are being asserted.” Pet. 102. Patent Owner responds that only one claim (claim 25) is challenged in the IPR but not asserted in the district court. Prelim. Resp. 53–54. Patent Owner also acknowledges that the Rick reference is not asserted in the district court, but argues that Petitioner only relies on that reference for one claim in the IPR. *Id.* at 54. We also note that the invalidity contentions in the district court assert many more references and combinations than are asserted in the Petition, including sixteen references that are alleged to anticipate one or more claims of the ’802 patent but are not relied on in the Petition, and at least three obviousness combinations (Suzuki and Brown, various combinations based on Montojo

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as primary reference, and various combinations based on Brown as the primary reference) that are not relied on in the Petition. Ex. 2005, 33, 35, 39–40.

Because the Petition and the district court litigation include a number of common issues, as well as significant issues and arguments that differ among the proceedings, we find that this factor is neutral.

5. *Fintiv Factor 5: Whether Petitioner is the Defendant in the Parallel Proceeding*

Under the fifth *Fintiv* factor, we consider “whether the petitioner and the defendant in the parallel proceeding are the same party.” *Fintiv*, Paper 11 at 6. Here, Petitioner is also the defendant in the parallel district court case. Therefore, we find that factor 5 weighs in favor of exercising discretion to deny institution.

6. *Fintiv Factor 6: Other Considerations, Including the Merits*

Under the sixth *Fintiv* factor, we consider “other circumstances that impact the Board’s exercise of discretion, including the merits.” *Fintiv*, Paper 11 at 6. As discussed below, we determine that Petitioner has shown a reasonable likelihood of unpatentability at least as to Ground 1. We also determine that, for Ground 1, Petitioner has made a strong showing of unpatentability that rises well above the minimum sufficiency to meet the statutory institution threshold⁶ because: (1) Petitioner presents a strong case that the preamble of claim 1 is not limiting; (2) Petitioner presents a strong case that Rick discloses the limitations in the body of claim 1; and (3) Patent

⁶ In this case, we need not decide whether Petitioner’s showing rises to the level of “compelling” under the Interim *Fintiv* Guidance because, in light of Petitioner’s strong showing as to claim 1, the factors overall weigh in favor of institution.

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Owner does not challenge Petitioner's showing that Rick discloses the body of claim 1. Therefore, we find that this factor weighs in favor of institution.

7. *Conclusion*

As noted above, we take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Fintiv*, Paper 11 at 6. Weighing all of the factors, we are not persuaded that the interests of efficiency and integrity of the system would be best served by invoking 35 U.S.C. § 314(a) to deny institution of a potentially meritorious petition, particularly because the parallel district court case is at a relatively early stage and the merits of Ground 1 are strong. Thus, based on the record before us, we determine that the facts of this case do not warrant discretionary denial.

III. CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has demonstrated a reasonable likelihood of success in proving that at least one of the challenged claims of the '802 patent is unpatentable. We therefore institute trial on all challenged claims and grounds raised in the Petition. *See PGS*, 891 F.3d 1354 at 1360 (a decision whether to institute an *inter partes* review “require[s] a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

At this stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or as to the construction of any claim term.

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IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–4, 6–10, 13–14, 17, and 21–25 of the '802 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '802 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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